



# 2020-2021 COURSE SYLLABUS

## AP Chemistry

### GENERAL INFORMATION:

Instructor name: Andrea Horgan

Room Number: B26

Tutoring Hours: (in person) Before school (7:45am -8:15 am) and during lunch (M-W-F)  
(online) Office hours will be available. Schedule will be announced the first week of school.

Phone number: 916-433-5200 ext 506126

Email Address: [andrea-horgan@scusd.edu](mailto:andrea-horgan@scusd.edu)

Remind code: @jfkapchem

\*Remind is not a requirement, HOWEVER, information will be sent out through Remind on a regular basis. The instructor will be available to answer any questions until 8pm everynight.

Textbook: Chemistry: A Molecular Approach, 5<sup>th</sup> edition  
By Nivaldo Tro  
Pearson

This is a newly adopted textbook with an online component. Online registration will take place the first week of school.

\*\*In addition to the textbook, an A.P. Chemistry review book is highly recommended.

### COURSE DESCRIPTION:

The AP Chemistry course provides students with a college-level foundation to support future advanced coursework in chemistry. Students cultivate their understanding of chemistry through inquiry-based investigations, as they explore content such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium.



## College Course Equivalent

The AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first college year.

## Prerequisites

The following prerequisites are suggested, but not required. Students should have successfully completed Biology or Molecular Biology with a B or better. Students should also have successfully completed Math 1 with a B or better.

## Lab Requirement

This course requires that 25 percent of instructional time engages students in lab investigations. This includes a minimum of 16 hands-on labs (at least six of which are inquiry-based). It is recommended that students keep a lab notebook throughout.

## AP TEST:

All students will be required to take the AP Chemistry test on May 7, 2021. The testing fees will be paid for by the district.

## GRADING:

The grading scale is as follows:

Grade Percent

A 89.5-100%

B 79.5-89.4%

C 69.5-79.4%

D 59.5-69.4%

F Below 59.4%

The grades will be divided as:

10% - Classwork/Homework

50% - Tests

30% - Labs (including lab reports and lab quizzes)

10% - Quizzes

## MAKEUP WORK:

Makeup work will be given if the absence is excused. Students have as many days to make up the work as they were absent. For example, if a student was absent for 3 days, he/she has 3 days to make up the work missed.

**LATE WORK:**

Any late work that is turned in after the due date (that does not qualify as makeup work) will be given half credit.

**CELL PHONE POLICY:**

(In person) There will be occasions where cell phones will be used for data collection or to look up information online. If cell phones are being used during an inappropriate time, the student will be given one warning. After that, the cell phone will be confiscated and turned into the administration. If a cell phone is out at ANY time during a test FOR ANY REASON, the student will receive a zero on the test WITHOUT A WARNING.

(Online) Students will not be allowed to use cell phones while taking assessments. If a student is caught using a cell phone

**DAILY AGENDA:**

**Daily lesson/lab:** Lessons and labs will be based on the unit of study and will include lecture, group work, independent study and group labs. While we are learning remotely, online labs and simulations will be used to supplement and meet the lab component of the class.

**CLASS RULES AND EXPECTATIONS:**

1. Do only those things which allow you and others to learn.
2. Bring materials necessary for learning.
  - a. Please bring textbooks to class on the days assigned.
  - b. Bring a pen/pencil and paper to class.
3. No food or drinks
  - a. Because of the nature of the course and exposure of chemicals, food and drinks will not be allowed. Students may bring a water bottle.
4. Respect teacher and classmates.
5. Arrive on time.
  - a. Any tardies will result in a lunch detention issued by the administration.
6. ALL LABORATORY SAFETY RULES AND PROCEDURES MUST BE FOLLOWED.
  - a. A separate list of lab rules and procedures will be handed out to each student.



## GENERAL COURSE OUTLINE \*numbers indicate approximate number of lessons

### Unit 00 : General Science and Math Review (1 week)

### Unit 1: Atomic Structure and Properties (3 weeks)

Moles and molar mass(1)  
Mass spectroscopy of elements(1)  
Pure substances and mixtures (2)  
Electron Configuration(1)  
Photoelectron Spectroscopy(1)  
Periodic Trends(1)  
Valence Electrons and Ionic Bonding(1)

### Unit 2: Molecular and Ionic Structure and Properties (2 weeks)

Chemical Bonds (3)  
Intramolecular Forces and Potential Energy (1)  
Lewis Diagrams (1)  
Resonance and Formal Charge (1)  
VSEPR and Hybridization (1)

### Unit 3: Intermolecular Forces (4 weeks)

Intermolecular Forces(1)  
Properties of Solids(1)  
Solids, Liquids and Gases(1)  
Ideal Gas Law(1)  
Kinetic Molecular Theory(1)  
Deviation from the Ideal Gas Law(1)  
Solutions and Mixtures (2)  
Solubility and Separation (2)  
Photoelectric Effect (1)  
Spectroscopy (2)

### Unit 4 : Chemical Reactions (2 weeks)

Reactions (2)  
Stoichiometry (1)  
Types of Chemical Reactions (1)  
Intro to Acids and Bases (1)  
Redox Reactions (2)

Unit 5: Kinetics (3 weeks)

Rates and rate law (2)

Concentration over time (1)

Reaction mechanism (4)

Collision and energy (3)

Catalysis(1)

Unit 6: Thermodynamics (3 weeks)

Thermodynamic basics (3)

Calorimetry (2)

Energy and phase change (1)

Bond enthalpies (1)

Enthalpy of formation (1)

Hess's law (1)

Unit 7: Equilibrium (4 weeks)

Intro to Equilibrium (1)

Direction of Reversible reactions (1)

Reaction Quotient (1)

Equilibrium Constant (1)

Calculating the Equilibrium Constant (1)

Magnitude of the Equilibrium Constant (1)

Properties of the Equilibrium Constant (1)

Equilibrium concentrations (1)

Representations of Equilibrium (1)

Introduction to Le Chatelier's principle (1)

Reaction quotient and Le Chatelier's principle (2)

Introduction to Solubility Equilibria (1)

Common-ion effect (1)

pH and solubility (1)

Unit 8: Acids and Bases (3 weeks)

Introduction to acids and bases (1)

pH and pOH of strong acids and bases (1)

Weak acid and base equilibria (1)

Acid Base Reactions (1)

Structure of Acids and Bases (1)

pH and pK<sub>a</sub> (1)

Properties of Buffers (1)



Henderson-Hasselbach Equation (1)

Buffer capacity (1)

Unit 9: Application of Thermodynamics (3 weeks)

Entropy (2)

Free energy (3)

Free energy and Equilibrium (2)

Galvanic and Electrolytic Cells (2)

Cell potential under nonstandard conditions (1)

Electrolysis and Faraday's law (1)

Unit 10: Review (3 weeks)

90 Total lessons

31 Weeks

AP Test: May 7<sup>th</sup> 2020